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Traumatic War Stressors and Psychiatric Symptoms Among World War II, Korean, and Vietnam War Veterans

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Three hypotheses regarding symptoms of war-related posttraumatic stress disorder and general psychiatric distress were tested: that symptoms are more severe the more severe the traumatic exposure, regardless of the war in question; that symptoms are less severe the older the veterans' age; and that symptom levels differ across sociocultural cohorts. A total of 5,138 war zone veterans who were seeking treatment from specialized Veterans Affairs outpatient clinical teams made up the sample: 320 World War II, 199 Korean War, and 4,619 Vietnam War veterans. All hypotheses were supported significantly. The similarity of relationships between traumatic exposure and symptoms across wars testifies to the generality of these experiences. Furthermore, the results suggest the operation of significant effects due both to aging and to cohort differences in sociocultural attitudes toward the stigma of mental illness and the popularity of the wars.

Studies of veterans from the Vietnam War have found that exposure to combat and abusive violence is related to the development of posttraumatic stress disorder (PTSD) and other psychiatric symptoms (e.g., Breslau & Davis, 1987; Card, 1983; Egendorf, Kadushin, Laufer, Rothbart, & Sloan, 1981; Fontana & Rosenheck, 1993a; Green, Grace, Lindy, Gleser, & Leonard, 1990; Kulka et al., 1988). Studies of veterans from World War II and the Korean War suggest similar relationships (Archibald, Long, Miller, & Tuddenham, 1962; Archibald & Tuddenham, 1965; Brill & Beebe, 1955; Elder & Clipp, 1989; Futterman & Pumpian-Mindlin, 1951), but the use of different methodologies has made conclusions regarding these similarities tentative. A more definitive comparison has also been complicated by the fact that many of the studies have combined World War II and Korean War veterans (e.g., Archibald & Tuddenham, 1965; Davidson, Kudler, & Smith, 1987; Elder & Clipp, 1989).

This is unfortunate because military service in these wars differed in important ways (Perret, 1990). World War II was a traditional war, fought by armies for territory. The enemy was clearly identified as fighting men in uniform from the other side, and the American public was overwhelmingly supportive of the war effort throughout. The Korean War was fought by armies for territory, but there was more involvement of civilians in the fighting. The American public was supportive of the war at first, but tired of it eventually and looked for a way out. The Vietnam War started as a war for territory, but soon evolved into a war of attrition. The "body count" of enemy killed replaced territory seized and held as the primary yardstick of success. Civilians engaged in organized guerrilla warfare against U.S. troops. The American public tolerated the war effort at the beginning, but became increasingly and actively opposed to it as the war proceeded. These differences in the clarity with which the combatants could be identified and in the clarity with which the goals of the wars could be articulated and understood, along with the differences in public support, could potentially be important factors contributing to differences in the development of chronic stress reactions that persist across the years.

One purpose of this article, therefore, is to compare the relationships between traumatic exposure and psychiatric symptoms across these three major wars, with the goal of determining the generality of the relationships between traumatic exposure and symptoms. Another purpose is to examine the relationships of symptoms to age and cohort membership for evidence suggesting the effects of aging, sociocultural differences, or both. There are great differences in age across veterans from the different wars. Several studies have found that older people report fewer or less severe psychiatric symptoms than younger people do (e.g., Aldwin, Spiro, Levenson, & Bossé, 1989; Regier et al., 1988; Weissman et al., 1985).

Aging effects might be due to physiological changes associated with senescence (e.g., Kenney, 1989). In addition or alternatively, aging effects might be due to changes in coping styles (e.g., Aldwin, 1991) or normative expectations concerning well-being (e.g., Suls, Marco, & Tobin, 1991). Aging effects, however, are connected intimately with sociocultural cohort effects, such as differences in generational attitudes concerning the stigma of mental illness and differences in the popularity of a war. Disentangling aging effects, sociocultural cohort effects, and trauma-specific effects poses a complicated analytic challenge. In this article, we examine the evidence for each, controlling for the effects of the others.

We evaluate three basic hypotheses in this article. The first is that traumatic exposure is related to PTSD and related psychiatric symptoms positively and similarly across war cohorts, age

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and cohort membership notwithstanding. The second is that age is related negatively to PTSD and related psychiatric symptoms, cohort membership and traumatic exposure notwithstanding. The third hypothesis is that cohort membership is related differently to PTSD and related psychiatric symptoms, age and traumatic exposure notwithstanding.

Method

Sample

The data were obtained as part of a program evaluation of the national network of specialized outpatient clinics for the treatment of PTSD that has been established by the Department of Veterans Affairs. The sample consisted of war zone veterans who sought treatment from this program between September 1, 1989 and December 31, 1992. War zone veterans are those reporting service in a combat zone during either World War II, the Korean War, or the Vietnam War.

Veterans reporting service in more than one war were excluded because the purpose of the study was to compare the three wars. A total of 5,138 veterans met the inclusion criteria: 320 from World War II, 199 from the Korean War, and 4,619 from the Vietnam War. As can be seen from Table 1, the cohorts differed significantly in age, marital status, ethnicity, years of education, and the presence of an interfering medical condition.

Measures

As part of the intake process, clinicians completed the War Stress Interview—Part 1 (WSI-1; Fontana, Rosenheck, & Spencer, 1990) on each veteran. The WSI-1 is a highly structured interview that is composed of several standard instruments as well as additional items constructed specifically for this evaluation. Relevant measures from the WSI-1 are described below.

In a previous article, we compared two general approaches to the specification of war zone traumatic experiences: an environmental approach and a psychological approach (Fontana, Rosenheck, & Brett, 1992). Environmental specification focuses on traumatic experiences as external events, whereas psychological specification focuses on the internal meaning of external events.

Environmental traumatic experiences. Exposure to combat, witnessing abusive violence, and participating in abusive violence were included as representatives of the environmental specification of war zone traumas. *Combat exposure* was measured by an expansion of the Revised Combat Scale (Laufer, Yager, Frey-Wouters, & Donnellan, 1981). The Revised Combat Scale measures traditional aspects of warfare that have been considered to be necessary and appropriate to the legitimate conduct of war. Slight changes in wording were made in some of the existing items to make them applicable to World War II, the Korean War, and the Vietnam War. Five new items were written to encompass additional aspects of warfare, some of which were more characteristic of World War II and the Korean War than of the Vietnam War. New items that were sensitive to differences among veterans of the three wars were took part in an amphibious invasion, was on a ship or aircraft that was under attack, was a medic or nurse who had to decide who would receive lifesaving care, and was involved in handling dead bodies away from the battlefield. A fifth item did not differentiate among veterans of the war eras but was included to broaden the range of traumatic experiences: ever sat with anyone dying from battle wounds. The expanded version of the Revised Combat Scale had an internal consistency of .70, compared with .67 for the original version. The two versions correlated .95 with each other.

Exposure to *witnessing* and *participating in abusive violence* were measured using the convention derived by Laufer and his colleagues (Laufer, Brett, & Gallops, 1985). Abusive violence refers to any aggression that is considered to be outside the bounds of traditional warfare, such as torturing prisoners, mutilating enemy bodies, or raping or killing civilians. Abusive violence was coded as two dichotomous items: (a) witnessing others only and (b) participating oneself, regardless of witnessing others.

Psychological traumatic experiences. Psychological specification of war traumas was represented by four roles that veterans played in the initiation of death and injury: having been a *target* of others' attacks, having been an *observer* of others' attacks, having been an *agent* of attacks oneself, and having been a *failure* at preventing death or injury to others from attacks. Target was measured by the single experience of being terrified of being killed or wounded. Observer was measured as the sum of three experiences: horror at witnessing atrocities, horror at exposure to death and dismemberment, and horror at the continual stream of human remains to be processed (α = .58). Agent was measured as the sum of three experiences: guilt over killing others, guilt over enjoying the killing of others, and guilt over participating in atrocities (α = .63). Failure was measured as the sum of four experiences: guilt over failing to fulfill responsibilities, guilt over accidentally contributing

Table 1
Demographic Comparison of Veterans Across War Cohorts

Variable	World War II			Korea			Vietnam					
	M	*SD*	%	*M*	*SD*	%	*M*	*SD*	%	*F*	χ^2	*p*
Age	69.03	3.61		60.23	3.07		43.43	3.46		100,024.58		.0001
Marital status											274.97	.0001
Married			77.5			68.8			44.7			
Widowed			5.6			3.0			0.8			
Separated and divorced			13.4			24.6			44.7			
Never married			3.1			3.5			9.8			
Ethnicity												
White			88.1			84.4			69.5			
Black			0.9			7.5			18.5			
Hispanic			4.7			5.5			8.5			
Other			6.3			2.5			3.6			
Education (years)	11.30	3.0		11.33	3.20		12.81	2.10		105.99		.0001
Medical condition			76.9			78.9			50.5		138.03	.0001

to the death of a buddy, grief or anger over the death of a buddy, and feeling inadequate to effectively treat or save the wounded (α = .52).

Clinicians were asked to indicate for each veteran, on the basis of the information generated in completing the WSI-1, which of 11 war zone experiences were distressing, disabling, or both at the present time. This technique was modeled after the one devised for the rating of serious life events by clinicians (Weiss, Horowitz, & Wilner, 1984). The decision to ask clinicians to report on these experiences rather than to ask veterans themselves was based on serious reservations to the latter approach that were expressed by several consultants and participants in the evaluation. The reservations centered around concern that direct inquiry to the veterans might be disruptive to the development of clinical rapport, particularly because of the implications of personal responsibility for the occurrence of the experiences and because the data collection was being conducted so early in the clinical evaluation process.

Symptoms. PTSD and guilt symptoms were measured by the Structured Clinical Interview for *DSM-III* (*Diagnostic and Statistical Manual of Mental Disorders—3rd edition, revised*; Spitzer & Williams, 1985). They were coded dichotomously as present or absent. Sixteen symptoms that are current criteria for PTSD (American Psychiatric Association, 1987) were summed to yield a total PTSD score (α = .88). Similarly, items assessing moral guilt and survivor guilt were summed to produce a total guilt score (α = .54). General psychiatric symptoms aside from substance abuse were measured by the psychiatric subscale of the Addiction Severity Index (McLellan et al., 1985). Scores can range from 0 to 1.0 (α = .74). Finally, an index of suicidality was derived to reflect the severity of suicide attempts. This index was coded 2 if the veteran was ever hospitalized for treatment of the physical consequences of an attempt, 1 if the veteran made one or more attempts without ever being hospitalized for treatment of the physical consequences, and 0 if the veteran never made a suicide attempt.

Data Analysis

The much larger size of the Vietnam cohort compared with the World War II and Korean War cohorts posed a problem for analyses involving pooled cohorts. An unweighted analysis in which the actual sample sizes were used would give the Vietnam cohort much more influence over the results involving cohort effects than the other cohorts. To counter this result, we weighted the cohorts inversely according to their proportions in the total sample for all analyses conducted on pooled samples. This served to represent the relationships for each cohort as they would be expected to be if all the cohorts were of equal size. Weighting did not affect the degrees of freedom in testing the significance of the relationships.

Data analysis was conducted in four steps. In each step, years of education and presence of an interfering medical condition were included as control variables because of their relationships with age, cohort, and symptoms:

1. The first hypothesis was tested by regressing symptoms on each category of traumatic exposure for each cohort separately, controlling for age.
2. The second hypothesis was evaluated by regressing symptoms on age across all cohorts pooled together, controlling for cohort membership and traumatic exposure.
3. The third hypothesis was evaluated by analyses of variance (ANOVAs) of symptoms across cohorts, controlling for age and traumatic exposure.
4. For descriptive purposes, a multivariate analysis of variance (MANOVA) was performed on all traumatic exposure variables by cohort, controlling for age, to examine the comparability of traumatic exposure across the three cohorts.

Results

The first step evaluated relationships between symptoms and traumatic exposure by regressing symptoms on each category of exposure for each cohort separately, controlling for age, years of education, and medical condition. There was a total of 21 relationships possible for each symptom category. As can be seen from Table 2, there were 18 significant betas for PTSD symptoms, 18 for general psychiatric symptoms, and 17 for guilt symptoms, indicating a strong commonality of association across cohorts. The picture for suicidality was different, however. There was a total of only 9 significant betas, with the Vietnam cohort accounting for 5 of them. With the exception of the agent role, then, significant association between traumatic experiences and suicidality was very much focused on the Vietnam cohort.

In the second step, relationships between age and symptoms were evaluated by regressing symptoms on age across pooled cohorts, controlling for traumatic exposure, cohort membership, years of education, and medical condition. Age was related

Table 2
Significant Beta Coefficients Between War Traumas and Symptoms, Controlling for Age, Education, and Medical Condition, Within War Cohorts

Trauma and cohort	PTSD	General psychiatric	Guilt	Suicidality
		Environmental traumas		
Combat				
World War II	.27	.22	.24	
Korea	.37	.26	.28	
Vietnam	.25	.11	.23	.04
Witnessing				
World War II				.13
Korea	.18		.19	
Vietnam		.03		
Participating				
World War II	.18		.29	
Korea		.22		.15
Vietnam	.20	.13	.24	.10
		Psychological traumas		
Target				
World War II	.23	.11		
Korea	.20	.21	.14	
Vietnam	.21	.08	.09	
Observer				
World War II	.41	.24	.17	
Korea	.28	.31	.23	
Vietnam	.34	.23	.26	.12
Agent				
World War II	.27	.25	.44	.12
Korea	.39	.29	.39	.22
Vietnam	.31	.21	.36	.14
Failure				
World War II	.33	.21	.26	
Korea	.34	.34	.38	
Vietnam	.30	.21	.28	.12

Note. All coefficients are significant at $p < .05$. PTSD = posttraumatic stress disorder.

significantly to all four symptom categories: PTSD ($\beta = -.20, p < .0001$), general psychiatric symptoms ($\beta = -.22, p < .0001$), guilt ($\beta = -.20, p < .0001$), and suicidality ($\beta = -.10, p < .05$).

In the third step, ANOVAs were performed on symptoms by cohort membership for all cohorts pooled together, controlling for age, traumatic exposure, years of education, and medical condition. All the ANOVAs were significant. Results of these tests, including raw and adjusted means, are presented in Table 3. There was a significant effect for PTSD overall, but there were no significant differences among pairs of cohorts. Korean veterans were more distressed in general than either World War II or Vietnam veterans. Moreover, Korean veterans were more suicidal than World War II veterans, although not more so than Vietnam veterans. Vietnam veterans felt more guilty than either World War II or Korean veterans and were more suicidal than World War II veterans.

For the fourth step, the levels of traumatic exposure across the war cohorts were evaluated as a group by a MANOVA, supplemented by a separate ANOVA for each variable. Age, years of education, and presence of an interfering medical condition were included as covariates. The MANOVA was highly significant, $F(14, 9798) = 8.62, p < .0001$. Results of the univariate ANOVAs are presented in Table 4. Both the raw means, unadjusted for any covariates, and the adjusted means, reflecting the influence of the covariates (age, education, and medical condition) and the weighting procedure, are presented for comparison.

The analyses showed that Vietnam veterans witnessed more abusive violence and were more frequently targets and observers of killing than were World War II and Korean War veterans. Furthermore, Vietnam veterans were exposed to more combat than were Korean veterans in this study.

Discussion

Despite differences in the levels of traumatic exposure and symptoms across cohorts, the relationships between traumatic exposure and symptoms revealed much commonality across cohorts. Data from both veterans and their clinicians indicate that the relationship of traumatic war experiences to current psychiatric symptoms is positive and similar across all three major U.S. wars. There is reason to believe, therefore, that much of what we have learned and have yet to learn about the impact of individual 20th century wars on veterans' psychological well-being is likely to be applicable to the effects of modern warfare in general.

The most striking example of this commonality is the role, agent of killing. This role was related significantly to all symptom categories in all cohorts, suggesting that responsibility for killing another human being is the single most pervasive, traumatic experience of war. The role of agent is followed closely in pervasiveness of emotional distress by the roles of observer and failure, as well as exposure to combat in general. These three traumatic experiences differ from agent only in the absence of relationships to suicidality among World War II and Korean War veterans.

Having been a target of killing and having participated in abusive violence are also related to emotional distress similarly across cohorts, although to a somewhat lesser extent than the preceding experiences. It is noteworthy that the role of target is the only experience not to be related significantly to suicidality in any of the cohorts. We have speculated elsewhere that, of the four roles, being a target involves the least personal responsibility for inflicting death or injury on others (Fontana et al., 1992). Thus, the target role is distinctive among the four roles in not being a factor in the occurrence of suicidal behavior.

The existence of significant relationships between age and symptoms—after controlling for contributions from education, medical condition, traumatic exposure, and cohort membership—suggests the presence of aging effects. It is not possible to determine which among the various mechanisms of aging that have been suggested in the literature might be involved in the

Table 3
Univariate Analyses of Variance of Symptoms Across War Cohorts, With Raw Means, Standard Deviations, and Adjusted Means

Symptoms	WWII	Korea	Vietnam	*F*	*p*	Significant difference
PTSD				4.60	.0100	
Raw *M*	8.82	9.73	10.70			
SD	4.61	4.52	4.35			
Adjusted *M*	11.04	11.19	10.48			
General psychiatric				20.01	.0001	K > WWII, K > V
Raw *M*	0.47	0.55	0.57			
SD	0.21	0.20	0.20			
Adjusted *M*	0.57	0.60	0.56			
Guilt				4.30	.0200	V > WWII, V > K
Raw *M*	0.56	0.71	0.90			
SD	0.74	0.78	0.81			
Adjusted *M*	1.05	1.01	0.85			
Suicidality				23.41	.0001	K > WWII, V > WWII
Raw *M*	0.15	0.44	0.60			
SD	0.48	0.74	0.78			
Adjusted *M*	0.38	0.57	0.56			

Note. WWII = World War II; PTSD = posttraumatic stress disorder; K = Korea; V = Vietnam.

Table 4
Univariate Analyses of Variance of Traumatic Exposure Across War Cohorts, With Raw Means, Standard Deviations, and Adjusted Means

Cohort	WWII	Korea	Vietnam	*F*	*p*	Significant difference
			Environmental traumas			
Combat				19.16	.0001	V > K
Raw *M*	12.51	12.00	12.53			
SD	3.43	3.61	3.42			
Adjusted *M*	11.74	11.43	12.61			
Witnessing				5.23	.0100	V > WWII, V > K
Raw *M*	0.32	0.34	0.37			
SD	0.47	0.47	0.48			
Adjusted *M*	0.21	0.26	0.38			
Participating				0.01	*ns*	
Raw *M*	0.09	0.17	0.32			
SD	0.28	0.38	0.47			
Adjusted *M*	0.30	0.30	0.30			
			Psychological traumas			
Target				22.42	.0001	V > WWII, V > K
Raw *M*	0.68	0.58	0.60			
SD	0.47	0.50	0.49			
Adjusted *M*	0.47	0.43	0.63			
Observer				13.47	.0001	V > WWII, V > K
Raw *M*	1.47	1.39	1.55			
SD	1.02	1.03	1.02			
Adjusted *M*	1.13	1.18	1.58			
Agent				0.22	*ns*	
Raw *M*	0.53	0.71	1.05			
SD	0.71	0.86	1.07			
Adjusted *M*	1.06	1.03	1.00			
Failure				1.08	*ns*	
Raw *M*	1.35	1.45	1.51			
SD	0.99	1.13	1.11			
Adjusted *M*	1.62	1.60	1.48			

Note. WWII = World War II; V = Vietnam; K = Korea.

present case. A shift in cognitive coping strategy is one such mechanism, however, that seems to fit. For instance, Aldwin (1991) found that older adults reported using "escapist" coping strategies less than younger adults did; that is, older persons were less prone to wishful fantasizing or daydreaming about desired solutions. Such an avoidance of wishfulness might also be implicated in what Suls et al. (1991) have described as a downward adjustment of expectations based on the stereotype of the frail elderly. Although some such mechanisms would seem to be compatible with the present results, only further research that is directed specifically at this possibility would be adequate to answer the question.

Standing alongside the presence of significant age relationships with symptoms are significant cohort relationships, even after the contributions of age, education, medical condition, and traumatic exposure are taken into account. The less severe symptomatology reported among World War II veterans compared with Korean and Vietnam veterans could conceivably be due to the greater popularity of World War II, the greater stigma attached to mental illness by American society during the formative years of the World War II generation, or both.

Being treated more as heroes at the time of homecoming may have mitigated the impact of war experiences on psychiatric symptoms for World War II veterans. In this regard, a study of Vietnam veterans found that the quality of the homecoming reception had a major impact on the subsequent development of PTSD and other psychiatric symptoms (Fontana & Rosenheck, 1993b). Additionally or alternatively, World War II veterans may have underreported the severity of their symptoms because of the greater stigma that admitting to psychiatric symptoms has for members of their generation.

What was most surprising in the present study was the greater distress and suicidality of Korean veterans compared with other veterans, particularly those from World War II. These differences might also reflect differences in the greater stigma of mental illness in earlier generations; but, even more so, they probably reflect the unpopularity of the Korean War and the fact that Korean veterans have been America's forgotten warriors in comparison to World War II and Vietnam veterans (Rosenheck & Fontana, in press). In contrast to World War II, the Korean War ended in a negotiated stalemate. Stimulated by reports (subsequently discredited) that some prisoners of war had "con-

verted" to Communism, the conduct and valor of Korean veterans were publicly questioned, and their presumed poor performance in the war was cited as evidence of the deterioration of the American spirit (Severo & Milford, 1989). There were no victory parades for Korean veterans; 10 years after the Vietnam Veterans Memorial was dedicated, there is still no national memorial to the 55,000 American troops who died in Korea.

The comparison of levels of traumatic exposure across cohorts is suggestive of greater traumatic exposure in the Vietnam War. This indication can only be considered suggestive because it is based on information from the treatment-seeking segments of the parent populations that are not representative samples of them. There are daunting obstacles, however, to obtaining national probability samples of these populations that would be needed to achieve representativeness. One is the cost. The National Vietnam Veterans Readjustment Study (Kulka et al., 1988) cost over 9 million dollars for a Vietnam cohort alone. Another is the fact that the cohorts have suffered different levels of attrition because of death. Thus, even a national probability study of survivors would be biased in its sampling. Practically speaking, therefore, the most that it may be possible to accomplish at this time is to glean information from samples that are available, knowing that comparative results are, at best, informed approximations.

Finally, it is important to bear in mind the limitations imposed by the retrospective nature of the data. It is evident that present reports of past events are colored to some extent by subsequent events and current interpretations (McFarlane, 1988). This is a limitation that affects virtually all studies of trauma and constitutes a general caveat to studies of this genre. However, although retrospective biases may have differentially affected the levels of traumatic exposure and symptoms across the cohorts, these biases would have been far less likely to have differentially affected the relationships among traumatic exposure and symptoms within the cohorts (Norris & Kaniasty, 1992). The commonality of relationships among traumatic exposure and symptoms across the three wars, therefore, is not likely to have been affected adversely to any substantial extent by retrospective biases in reporting.

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